

Serial No.: 10/620,119
Attorney Docket No.: 015559-288
Amendment After Final

Remarks

Claims 28, 56, 114, 116, 118 and 122 have been amended and new claims 123-130 have been added. Review and reconsideration in light of the amendments and remarks below are respectfully requested.

Claims 28, 31-56 and 113-122 are rejected as being unpatentable over U.S. Pat. No. 6,587,613 to De Natale. Accordingly, claim 28 has been amended to further clarify that the solderable surface is not positioned under the upper wafer portion and is exposed to provide ease of access to the solderable surface. It is noted that the contacts 82 of the De Natale reference are positioned under the upper wafer portion 50, 60, 70. In fact, as can be seen in Fig. 6 each of the contacts 82 are located directly below the upper wafer portions 50, 60, 70 and therefore are under the upper wafer portion and are also located in the coverage area.

In contrast, claim 28, as amended, specifies that the solderable surface is not positioned under the upper wafer portion and is exposed to provide ease of access and is not located within the coverage area of the upper wafer. For example, as shown in Fig. 7 of this application, the solder pads 80 are not located under the upper wafer and are laterally offset therefrom.

As noted at page 10, 2nd full paragraph of this application, locating each of the connection sites 88/solder pads 80 outside of the coverage area of the upper wafer allows each of the connection sites 88 to be easily accessed. For example, as shown in Fig. 8 of this application, a chip 81 can be easily coupled to the connection site 88 from a front side of the mirror array. In contrast, in the De Natale reference, the only way in which the contacts 82 of Fig. 6 can be accessed is from the underside of the mirror array.

In addition, locating the solderable surface in the claimed position may be the result of certain advantageous manufacturing processes, as previously outlined.

The undersigned would like to thank the Examiner for the courtesy of a brief telephone conversation on February 14, 2006 to discuss the De Natale reference. During that telephone conversation claim 28 was discussed in light of the De Natale reference. The Examiner indicated that an amendment to claim 28, as made in the manner made herein, may distinguish

Serial No.: 10/620,119
Attorney Docket No.: 015559-288
Amendment After Final

over the De Natale reference. Thus it is submitted that claim 28 patentable defines over the De Natale reference.

New claims 124 and 125 depend from claim 28 and further distinguish over the DeNatale reference. For example, claim 124 specifies that the microstructure has a thickness direction extending between the upper wafer portion and the lower wafer portion in a generally perpendicular manner to the upper wafer portion and the lower wafer portion, and that the solderable surface is not located under the upper wafer portion in the thickness direction. Claim 125 specifies that the upper wafer portion has a length, a width, and a thickness which is substantially smaller than the length and the width, and that the top view is a view of the upper wafer portion taken in a direction parallel to the width and perpendicular to the length and the width.

Independent claim 56 has been amended in a manner somewhat analogous to claim 28. Thus claim 56 specifies that the electronic component is not positioned under the upper wafer or wafer portion and is exposed to provide ease of mounting the electronic component. Claim 56 has also been amended to ensure consistent use of certain claim limitations with respect to the wafer/wafer portions. In contrast, what the Office action has construed as the claimed electrical component (drive electrode 66) is located under the upper wafer or wafer portion of the De Natale reference (see Fig. 7) and is not exposed. This is submitted that claim 56 patentably distinguishes over the De Natale reference.

New claims 126 and 127 depend from claim 56 and include limitations similar to claims 124 and 125.

Independent claim 118 has been amended in a manner similar to claim 28. In addition, new claim 128 depends from claim 118 and specifies that the electronic component is a separate component that is spaced apart from the electrode. In contrast, as previously noted it appears that the Office action may be construing the electrode 66 of the De Natale reference as both the claimed electrode and the claimed electronic component.

Serial No.: 10/620,119
Attorney Docket No.: 015559-288
Amendment After Final

Independent claim 122 specifies that the electronic component is positioned generally between the upper and lower wafer portions, and has been amended to clarify that the electronic component is a separate component that is spaced apart from the electrode. In contrast, the De Natale reference does not appear to disclose at least this claim limitation.

New claim 123 depends from claim 122 and specifies that the electronic component is a chip that is coupled to the solderable surface by flip chip bonding. Thus new claim 123 further distinguishes over the De Natale reference.

New claim 129 is similar to (unamended) claim 28 but specifies that the upper wafer portion and the lower wafer portion are coupled together by an electrically insulating material such that the upper and lower wafer portions are not directly electrically connected. At page 7 the final Office action takes the position that it would have been obvious to have an electrically insulating material between the upper and lower wafers in order to prevent unwanted electrical signals from inadvertently passing between the wafers.

However, it is submitted that the De Natale reference specifically teaches against this proposed modification. In particular, electrical signals are required to be passed between the two wafers of De Natale in order for that device to function as desired. With reference to Fig. 7, electrical signals are passed from the drive electronics 92 to the upper wafer portion 50, 60, 70 via the contacts 94, 98, 99. If the upper wafer portion 50, 60, 70 were to be electrically insulated from the lower wafer portion 92, then no electrical signals could pass and all function and utility of the De Natale reference would be destroyed.

At column 6, lines 20-22 of De Natale, it is specified that the structure is mechanically and *electrically* attached to the substrate with drive electronics utilizing flip chip bonding, and this electrical attachment is necessary for the reason outlined above. In addition, in the rejection of claim 120, the Office action takes the position that it would be obvious "to have placed a solderable surface on the upper surface of the lower wafer portion in order to connect/join the lower wafer portion with the upper wafer portion *in order for the system to communicate*" (emphasis added). Thus, the rejection of claim 120 recognizes the importance of communication

Serial No.: 10/620,119
Attorney Docket No.: 015559-288
Amendment After Final

between the upper and lower wafer portions, and appears to contradict the argument that it would have been obvious to electrically insulate the upper and lower wafer portions. Thus, it is submitted that independent claim 129 patentably distinguishes over the De Natale reference. In the conversation between the undersigned and the Examiner on February 14, 2006, the Examiner acknowledged that a claim similar to claim 129 might distinguish over the De Natale reference. However, should the Examiner believe otherwise, the Examiner is invited to call the undersigned to discuss this matter in greater detail.

Thus, in sum, it is submitted that the application is in a condition for allowance, and formal notice thereof is respectively solicited.

The Commissioner is hereby authorized to charge any additional fees required, including the fee for an extension of time, or to credit any overpayment to Deposit Account 20-0809. The applicant(s) hereby authorizes the Commissioner under 37 C.F.R. §1.136(a)(3) to treat any paper that is filed in this application which requires an extension of time as incorporating a request for such an extension.

Respectfully submitted,



Steven J. Elleman
Reg. No. 41,733

THOMPSON HINE LLP
2000 Courthouse Plaza NE
P. O. Box 8801
Dayton, Ohio 45401-8801
(937) 443-6838

422019.1